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New records of smut fungi. 4. *Microbotryum coronariae* comb. nov.

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Abstract — For *Ustilago coronariae* on *Lychnis flos-cuculi,* a new combination in *Microbotryum, M. coronariae,* is proposed. It is reported as new to Bulgaria.

Key words — *Microbotryaceae,* taxonomy

Introduction

A new combination in *Microbotryum, M. coronariae,* is proposed for *Ustilago coronariae* on *Lychnis flos-cuculi.*

Material & methods

Dried specimens from SOMF and (on loan) BP, BPI, COLO, DAOM, FH, H, ILL, ILLS, ISC, KRAM, M, KSC, MICH, NY, and W were examined under light (LM) and scanning electron (SEM) microscopes. For LM observations, spores were mounted in lactophenol solution on glass slides, gently heated to boiling point to rehydrate the spores, and then cooled. Spore measurements are given in the form: min–max (extreme values, if necessary) [mean ± 1 standard deviation]. The total number of spores (n) from all collections (x) measured are given in the form '(n/x)'. For SEM, spores were attached to specimen holders by double-sided adhesive tape and coated with gold with an ion sputter. The surface structure of spores was observed at 10 kV and photographed with a JEOL SM-6390 scanning electron microscope.

Taxonomy

Liro (1924) described *Ustilago coronariae* as a species morphologically identical with *U. dianthorum* Liro, *U. lychnidis-dioicae* Liro, and *U. stellariae* (Sowerby) Liro but with a narrow specialization on *Coronaria flos-cuculi* (L.) A. Braun (currently *Lychnis flos-cuculi*). Using artificial infections with *Ustilago coronariae,* Liro (1924: 319) demonstrated that the following caryophyllaceous plants were not hosts: *Agrostemma githago* L., *Dianthus deltoides* L., *Lychnis*

chalcedonica L., *Silene dioica* (L.) Clairv. (as *Melandrium rubrum*), *Silene latifolia* subsp. *alba* (Mill.) Greuter & Burdet (as *Melandrium album*), *Silene nutans* L., *Silene vulgaris* (Moench) Garcke (as *S. inflata*), *Stellaria graminea* L., *Stellaria holostea* L., and *Viscaria vulgaris* Bernh. Later, *Ustilago coronariae* was reduced to a synonym of *Ustilago violacea* and, after its transfer to *Microbotryum,* to *M. violaceum* s. lat. (cfr Vánky 1994: 156). Based on physiological (Liro 1924) and molecular phylogenetic (Le Gac et al. 2007, Refrégier et al. 2008, Devier et al. 2010) inferences, we propose that *Ustilago coronariae* be transferred to *Microbotryum* as an independent species.

Microbotryum coronariae (Liro) Denchev & T. Denchev, **comb. nov.** FIGS 1–2

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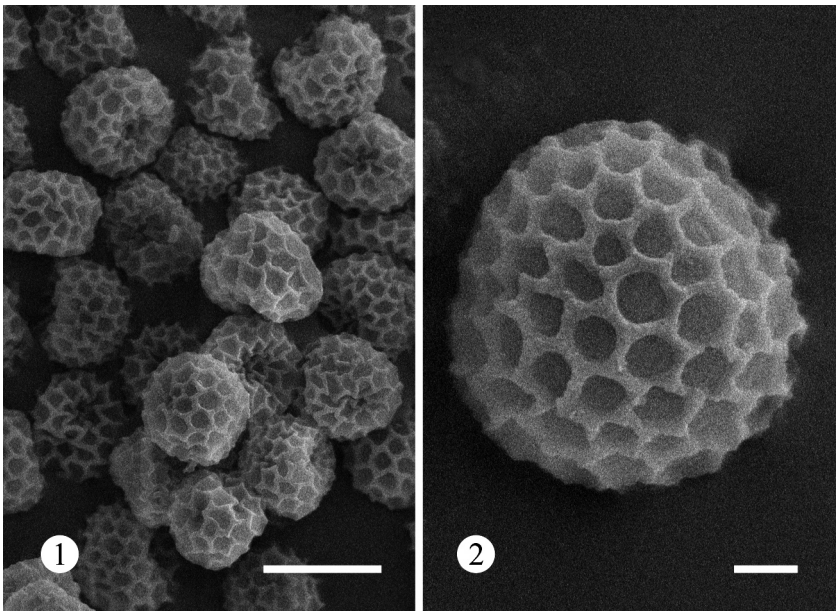
≡ *Ustilago coronariae* Liro, Annales Academiae Scientiarum Fennicae, Ser. A 17(1): 38, 1924. — Lectotype on *Coronaria flos-cuculi* (design. by Lindeberg 1959: 142), Finland, Regio aboënsis, Turku [Åbo], 11 July 1916, J.I. Liro & E. Kitunen; isolectotypes in Liro, Mycoth. fennica, no. 347.

SORI in anthers. SPORE MASS powdery, dark livid, dark purple or dark vinaceous (based on the Rayner (1970) colour chart). SPORES mainly globose or subglobose, sometimes broadly ellipsoidal or ovoid, 6.5–10(–11) × 5.5–9.5 [7.7 ± 0.7 × 7.2 ± 0.6] µm ($n/_{19}$=1750); spore wall reticulate, 6–8 meshes per spore diameter, meshes irregularly polygonal, (0.5–)0.7–1.4(–1.6) µm long; in SEM interspaces smooth.

SPECIMENS EXAMINED — On *Lychnis flos-cuculi* L.: **BULGARIA,** Mt. Vitosha, near Chouypetlyovo, 1250 m, 24 July 1992, C.M. Denchev (SOMF 29192); **ESTONIA,** island Saaremaa, 1899, T. Vestergren (as *U. violacea,* DAOM 215227); **FAEROE ISLANDS,** Kalsö, 5 August 1897, J. Hartz & C. Ostenfeld (as *U. coronariae,* H); **FINLAND,** Ab, **isolectotype,** Mycoth. fennica, no. 347 (H); Ab, Turku, Katariinan laakso, 11 July 1916, E. Kitunen & J.I. Liro (as *U. coronariae,* H); N, Vantaa, Tikkurila, 21 June 1919, A. Rainio (as *U. violacea,* H); Satakunta, Kankaanpää, Kunintaanlähde, 8 August 1935, M. Laurila (as *U. coronariae,* H); Satakunta, Yläne, Elijärvi, Vastalahti, 60°54' N, 17 July 1950, L.E. Kari (as *U. violacea,* Fungi exs. fennici, no. 710, MICH, NY, W 8496); Tb, Jyväskylä, Vuoritsalo, 7 July 1916, K. Linkola (as *U. coronariae,* H); **FRANCE,** 30 May 1880, N. Patouillard (as *U. antherarum,* FH); **GERMANY,** Bayern, Bez. Kelheim, Ulrain, 12 June 1940, E. Eichhorn (as *U. coronariae,* M); Nordrhein-Westfalen, Kr. Siegen, Freudenberg, 17 June 1934, A. Ludwig (as *U. coronariae,* BPI 159712, FH); Brandenburg, Berlin, Rahnsdorf, 16 June 1935, Fahrendorff (as *U. coronariae,* M, W 8999); Genshagen s. Berlin, 23 June 1899, P. Sydow (as *U. violacea,* Sydow, Ustilag., no. 214, FH, KSC, M, NY); Mellen bei Zossen, 9 June 1905, P. Sydow (as *U. violacea,* Sydow, Mycoth. german., no. 367, COLO F-6367, FH 1094144, ILL 17344, M, MICH; the host plant wrongly given as *Viscaria vulgaris*); Kr. Teltow, Trebbin, April 1946, W. Lempke (as *U. coronariae,* BPI 159710); **LATVIA,** prov. Vidzeme, Triedaine, 16 July 1932, A. Kirulis (as *U. coronariae,* BPI 159709, ILLS 23414); **NETHERLANDS,** Wageningen, 26 June 1923, J.I. Liro (as *U. violacea,* H); **POLAND,** Łęknica (on the label as "Muskau, Lugknitz"; cfr Scholz & Scholz 1988: 231), June 1891, P. Sydow (Sydow, Mycoth. march., no. 3222) (as *U. violacea,* BP 3033, NY); Dąbroszyn (formerly German Tamsel), 28 June 1925, P. Vogel (as *U. coronariae,* Sydow, Mycoth. german., no. 2290, BPI 159708, COLO F-8290, FH 1095112, ISC 371037, MICH, W 922); "Warthewiesen bei Tamsel", 28 June 1925, P. Vogel (as *U. violacea* f. sp. *lychnidis-*



Figs 1–2. Spores of *Microbotryum coronariae* on *Lychnis flos-cuculi* in SEM (Isolectotype, H). Scale bars: 1 = 10 μm; 2 = 1 μm.

flos-cuculi, Zillig, Ustilag. Europ., no. 59, M, W 10982); ditto, June 1926, P. Vogel (as *U. coronariae,* Petrak, Mycoth. gener., no. 1077, BPI 159713); Kórnik prope Poznan, June 1927, A. Wróblewski (Wróblewski et Siemaszko, Fungi polon. selec. exs., no. 7, KRAM-F 2964); **Russia,** Karelia, Kpocc, Iso-Keilak, 1 August 1896, Bergroth & J.I. Liro (as *U. coronariae,* H); Karelia, Kpor, Jernema – Somba, 17 August 1899, J.I. Liro (as *U. coronariae,* H); Karelia, Kpor, Prilug – Siftuga, 12 August 1899, J.I. Liro (as *U. coronariae,* H); Karelia, Kpor, Tamitsa, 26 July 1899, J.I. Liro (as *U. coronariae,* H); Karelia, Kl, Kankala, ad rivulum lacuum Valkialampi et Parijärui, 1 August 1935, M. Laurila (as *U. coronariae,* H); Sieverskaja, prov. Petropolitanae, 6/18 June 1898, Tranzschel (Jaczewski, Komarov & Tranzschel, Fungi rossiae exs., no. 207) (as *U. violacea,* FH, NY); Mikhaylovskoe, Moskow Gubernia, 28 June 1917, F. Bucholtz (as *U. violacea,* FH, NY); **Sweden,** prope Stockholm, 20 June 1883, E. Eriksson (as *U. violacea,* Eriksson, Fungi paras. scand. exs., no. 153a, NY); Östergötland, Gryt parish, Korsudden, 16 July 1957, J.A. Nannfeldt, no. 14874 (as *U. violacea,* Fungi exs. suecici, no. 3017, W 13061); Öl, Stara Röv., June 1900, G. Lagerheim (as *U. violacea,* FH, H); Ramsåsa, 28 June 1929, H. Christoffersson (as *U. coronariae,* H); **Switzerland,** Canton de Vand, Emrions de Leysiu, 11 July 1917, E. Mayor (as *Ustilago coronariae,* BPI 159 711).

Distribution — On *Caryophyllaceae: Lychnis flos-cuculi,* Europe (Austria, Bulgaria, Czech Republic, Estonia, the Faeroes, Finland, France, Germany, Latvia, Lithuania, the Netherlands, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, UK) (Liro 1924; Săvulescu 1957; Lindeberg 1959; Ignatavičiūtė 1975, 2001; Mordue & Ainsworth 1984; Vánky 1985; Zogg 1986; Scholz & Scholz 1988; Karatygin & Azbukina 1989; Almaraz 2002; Zwetko & Blanz 2004; Legon et al. 2005; etc.). The smut is reported here as new to Bulgaria.

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